Seattle Public Utilities

Northgate Drainage Options Glossary of Terms

April 30, 2004

Backwatering – installing a dam (or weir) in a pipe causes the water flowing through the pipe to form a pond the height of the dam. The pond extends up slope of the pipe until it reaches the same height elevation of the dam. This effect is called backwatering.

Base flow – The amount of water flowing through a pipe or creek system during dry weather. Base flow, which can also be called "dry weather" flow is fed by ground water.

Benefit comparison tables – The benefit comparison chart is a visual aid that helps compare the similarities and differences of the features of each alternative.

Flow Control structures – A structure such as a dam with a small opening that allows water to flow through at a specified rate.

Diversion structures – In the context of the Northgate options, these are underground vaults or maintenance holes that can split the flow of water in a pipe so that high flows stay in the pipe and low flows are diverted to a surface channel. This can also be called a "high flow bypass" or a "bypass pipe" which routes the large storm flows around the surface channel protecting it from erosion.

Drainage fund requirements – The drainage fund is collected from drainage rate payers for the service of managing stormwater. The drainage fund has legal restrictions on investments to protect the ratepayer.

GIS – Geographic information systems (GIS) organize data in map layers to allow the user to view and analyze information that overlaps in the same location. Examples of information might include soil types, locations of streets, buildings and/or infrastructure.

Green Grid wall **– A type of retaining wall that uses geo-textile fabric to create soil "pillows," that are planted with vegetation such as willows. These pillows can be very long and they can be stacked one on top of the next to create a wall. As the vegetation matures, it adds to the stability of the wall.**

Hydraulic evaluation – A study to examine how water moves through a system or from one geographic point to another. Hydraulic evaluations may be used to identify potential flooding problems or other flow related concerns.

Impervious surfaces - Surfaces such as rooftops, streets, and parking lots that do not allow rainwater to seep into the soil. Consequently, the water flows quickly and in great volumes, carrying pollutants with it to the nearest water body or drainage pipe.

Infiltration – The ability of water to soak into the ground.

Invert elevations – Refers to the elevation of the bottom of a pipe or maintenance hole

LIDAR – Light detection and ranging (LIDAR) provide state-of-the-art aerial laser mapping that creates three-dimensional digital maps

Life cycle cost/Net present life cycle cost – The life cycle cost of a project includes both capital costs as well as maintenance costs for the life of the project. (For purposes of this analysis, 50 years has been used as the expected life of the project.) Net present life cycle cost converts the construction and maintenance costs over the 50-year period to a present day value.

Links and nodes – These terms are used in the computer model that evaluates the flooding risks. Nodes refer to discrete points such as a pond or maintenance hole. Links are the connections between these points and can refer to sections of pipe, ditch or creek.

25 year storm event – A large storm event which has a 4% chance of occurring in a given year. Drainage utilities often use a 25-year storm to size drainage pipes.

100 year storm event -- A very large storm which has a 1% chance of occurring in a given year.

Natural drainage systems - A category of drainage capital improvement projects that strive to meet multiple goals: to infiltrate and slow stormwater flow, filter pollutants through the use of soils and plants, reduce impervious surface, increase vegetation, and improve the pedestrian experience. These projects use natural features - open, vegetated swales with amended soils, stormwater cascades, and small wetland ponds - to mimic the functions of nature lost to urbanization.

No Action option -- Typically an evaluation of alternatives includes a “No Action” alternative. For the purposes of this evaluation, the “no action” alternative assumes that the City would not purchase property on the Northgate south lot and the site would remain an asphalt parking lot.

Relative risks – This refers to comparing the risks of each option such as flooding or safety risks.

Storm flows – During storms, additional water drains into creeks. This higher weather related flow is sometimes called storm flows.

Subcatchment – A small area draining to a common point. In the context of this project, the phrase implies an area a few blocks or a couple of acres in size.

Swale – A wide, flat-bottomed ditch with plants growing inside. Swales can remove pollution from stormwater runoff by slowing the flows, letting dirt and silt settle out, filtering water through vegetation and letting water soak in. Many pollutants adhere to fine silt and as the silt settles.

Upstream flooding/Up-system flooding – Potential increased risk of causing flooding in pipes further up the system from the project.

Water quality treatment – A process for removing pollutants such as sediment, metals, nutrients and oil and grease from stormwater before discharging to a creek or lake.

Weir – a structure placed across a channel of water to regulate or divert the flow. It is similar to a small dam.